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WHAT IS CLAIMED IS:

- 1 1. A method for detecting halitosis, said method comprising:
2 contacting an array of sensors with mammalian breath suspected of
3 containing a marker gas indicative of halitosis; and
4 detecting said marker gas to determine the presence of halitosis.

- 1 2. A method in accordance with claim 1, wherein said array of
2 sensors comprises a member selected from the group consisting of a surface acoustic
3 wave sensor, a quartz microbalance sensor; a conductive composite; a chemiresistor; a
4 metal oxide gas sensor and a conducting polymer sensor, a dye-impregnated polymer film
5 on fiber optic detector, a polymer-coated micromirror, an electrochemical gas detector, a
6 chemically sensitive field-effect transistor, a carbon black-polymer composite, a micro-
7 electro-mechanical system device and a micro-opto-electro-mechanical system device.

- 1 3. A method in accordance with claim 1, wherein said marker gas is a
2 member selected from the group consisting of alkanes, alkenes, alkynes, dienes, alicyclic
3 hydrocarbons, arenes, alcohols, ethers, ketones, aldehydes, carbonyls, carbanions,
4 polynuclear aromatics, biomolecules, sugars, isoprenes isoprenoids, VOC, VOA, indoles,
5 skatoles, diamines, pyridines, picolines, an off-gas of a microorganism and fatty acids.

- 1 4. A method in accordance with claim 1, further comprising
2 generating a response from said sensors and inputting said response to a neural net trained
3 against known marker gases.

- 1 5. A method in accordance with claim 1, wherein said marker gas is
2 an off gas of a member selected from the group consisting of *Prevotella intermedia*,
3 *Fusobacterium nucleatum*, *Porphyromonas gingivalis*, *Porphyromonas endodontalis*,
4 *Prevotella loescheii*, *Hemophilus parainfluenzae*, *Stomatococcus mucii*, *Treponema*
5 *denticola*, *Veillonella species*, *Peptostreptococcus anaerobius*, *Micros prevotii*,
6 *Eubacterium limosum*, *Centipeda periodontii*, *Seimonad aremidis*, *Eubacterium species*,
7 *Bacteriodes species*, *Fusobacterium periodonticum*, *Prevotella melaninogenica*,
8 *Klebsiella pneumoniae*, *Enterobacter cloacae*, *Citrobacter species* and *Stomatococcus*
9 *mucilaginus*.

1 6. A method for detecting periodontal disease, said method
2 comprising:
3 contacting an array of sensors with mammalian breath suspected of
4 containing a marker gas indicative of periodontal disease; and
5 detecting said marker gas to determine the presence of periodontal disease.

1 7. A method in accordance with claim 6, wherein said array of
2 sensors comprises a member selected from the group consisting of a surface acoustic
3 wave sensor, a quartz microbalance sensor; a conductive composite; a chemiresistor; a
4 metal oxide gas sensor and a conducting polymer sensor, a dye-impregnated polymer film
5 on fiber optic detector, a polymer-coated micromirror, an electrochemical gas detector, a
6 chemically sensitive field-effect transistor, a carbon black-polymer composite, a micro-
7 electro-mechanical system device and a micro-opto-electro-mechanical system device.

1 8. A method in accordance with claim 6, wherein said marker gas is a
2 member selected from the group consisting of alkanes, alkenes, alkynes, dienes, alicyclic
3 hydrocarbons, arenes, alcohols, ethers, ketones, aldehydes, carbonyls, carbanions,
4 polynuclear aromatics, biomolecules, sugars, isoprenes isoprenoids, VOC, VOA, indoles,
5 skatoles, diamines, pyridines, picolines, an off-gas of a microorganism and fatty acids.

1 9. A method in accordance with claim 6, further comprising
2 generating a response from said sensors and inputting said response to a neural net trained
3 against known marker gases.

1 10. A method for detecting pneumonia, said method comprising:
2 contacting an array of sensors with mammalian breath suspected of
3 containing a marker gas indicative of pneumonia; and
4 detecting said marker gases to determine the presence of pneumonia.

1 11. A method in accordance with claim 10, wherein said array of
2 sensors comprises a member selected from the group consisting of a surface acoustic
3 wave sensor, a quartz microbalance sensor; a conductive composite; a chemiresistor; a
4 metal oxide gas sensor and a conducting polymer sensor, a dye-impregnated polymer film
5 on fiber optic detector, a polymer-coated micromirror, an electrochemical gas detector, a

6 chemically sensitive field-effect transistor, a carbon black-polymer composite, a micro-
7 electro-mechanical system device and a micro-opto-electro-mechanical system device.

1 12. A method in accordance with claim 10, wherein said marker gas is
2 a member selected from the group consisting of alkanes, alkenes, alkynes, dienes,
3 alicyclic hydrocarbons, arenes, alcohols, ethers, ketones, aldehydes, carbonyls,
4 carbanions, polynuclear aromatics, biomolecules, sugars, isoprenes isoprenoids, VOC,
5 VOA, indoles, skatoles, diamines, pyridines, picolines, an off-gas of a microorganism and
6 fatty acids.

1 13. A method in accordance with claim 10, further comprising
2 generating a response from said sensors and inputting said response to a neural net trained
3 against known marker gases.

1 14. A method for detecting vaginitis, said method comprising:
2 contacting an array of sensors with vaginal vapor suspected of containing a
3 marker gas indicative of vaginitis; and
4 detecting said marker gas to determine the presence of vaginitis.

1 15. A method in accordance with claim 14, wherein said array of
2 sensors comprises a member selected from the group consisting of a surface acoustic
3 wave sensor, a quartz microbalance sensor; a conductive composite; a chemiresistor; a
4 metal oxide gas sensor and a conducting polymer sensor, a dye-impregnated polymer film
5 on fiber optic detector, a polymer-coated micromirror, an electrochemical gas detector, a
6 chemically sensitive field-effect transistor, a carbon black-polymer composite, a micro-
7 electro-mechanical system device and a micro-opto-electro-mechanical system device.

1 16. A method in accordance with claim 14, wherein said marker gas is
2 a member selected from the group consisting of alkanes, alkenes, alkynes, dienes,
3 alicyclic hydrocarbons, arenes, alcohols, ethers, ketones, aldehydes, carbonyls,
4 carbanions, polynuclear aromatics, biomolecules, sugars, isoprenes isoprenoids, VOC,
5 VOA, indoles, skatoles, diamines, pyridines, picolines, an off-gas of a microorganism,
6 methylamine, isobutylamine, putrescine, cadaverine, histamine, tyramine,
7 phenethylamine and fatty acids.

1 17. A method in accordance with claim 14, further comprising
2 generating a response from said sensors and inputting said response to a neural net trained
3 against known marker gases.

1 18. A method for detecting ovulation, said method comprising:
2 contacting an array of sensors with vaginal vapor suspected of containing a
3 marker gas indicative of ovulation; and
4 detecting said marker gas to determine ovulation.

1 19. A method in accordance with claim 18, wherein said array of
2 sensors comprises a member selected from the group consisting of a surface acoustic
3 wave sensor, a quartz microbalance sensor; a conductive composite; a chemiresistor; a
4 metal oxide gas sensor and a conducting polymer sensor, a dye-impregnated polymer film
5 on fiber optic detector, a polymer-coated micromirror, an electrochemical gas detector, a
6 chemically sensitive field-effect transistor, a carbon black-polymer composite, a micro-
7 electro-mechanical system device and a micro-opto-electro-mechanical system device.

1 20. A method in accordance with claim 18, wherein said marker gas is
2 a member selected from the group consisting of alkanes, alkenes, alkynes, dienes,
3 alicyclic hydrocarbons, arenes, alcohols, ethers, ketones, aldehydes, carbonyls,
4 carbanions, polynuclear aromatics, biomolecules, sugars, isoprenes isoprenoids, VOC,
5 VOA, indoles, skatoles, diamines, pyridines, picolines, an off-gas of a microorganism,
6 androstenol, dehydroepiandrosterone sulfate and fatty acids.

1 21. A method in accordance with claim 18, further comprising
2 generating a response from said sensors and inputting said response to a neural net trained
3 against known marker gases.

1 22. A method for detecting a medical condition, said method
2 comprising: contacting an array of sensors with mammalian body fluid suspected of
3 containing a marker gas indicative of said medical condition; and detecting said marker
4 gas to determine the presence of the medical condition.

1 23. A method in accordance with claim 22, wherein said array of
2 sensors comprises a member selected from the group consisting of a surface acoustic

- 3 wave sensor, a quartz microbalance sensor; a conductive composite; a chemiresistor; a
- 4 metal oxide gas sensor and a conducting polymer sensor, a dye-impregnated polymer film
- 5 on fiber optic detector, a polymer-coated micromirror, an electrochemical gas detector, a
- 6 chemically sensitive field-effect transistor, a carbon black-polymer composite, a micro-
- 7 electro-mechanical system device and a micro-opto-electro-mechanical system device.